

**Notice of Allowability**

Application No.

10/695,980

Examiner

Nashaat T. Nashed, Ph. D.

Applicant(s)

PASAMONTES ET AL.

Art Unit

1656

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 7/18/05.
2. ☒ The allowed claim(s) is/are 5,6 and 8.
3. ☒ The drawings filed on 29 October 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☒ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 2/13/04.
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

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The application has been amended as requested in the communications filed October 29, 2003, and July 18, 2005. Accordingly, claims 1-4, 7 and 9-19 have been canceled; and claims 5, 6, and 8 have been amended.

Claims 5, 6, and 8 are pending and under consideration.

It is noted that record of the parent application serial number 08/980,832 ('832) indicates that the foreign priority document was filed on May 18, 1998. The '832 file, however, does not contain the priority document itself any more. If applicants wish to meet the 35 USC 119 conditions, they must file a new priority document in response to this Office action.

Claims 5, 6, and 8 are allowed.

The following is an examiner's statement of reasons for allowance: Applicants disclose the *crtW* gene of SEQ ID NO: 31 from the microorganism E-396 encoding the  $\beta$ -carotene  $\beta$ 4-oxygenase of SEQ ID NO: 32 as well as the *crtE*, *crtB*, *crtI*, and *crtY* genes from *Falvobacterium* sp. R1534 which are required for the biosynthesis of  $\beta$ -carotene.  $\beta$ -Carotene  $\beta$ 4-oxygenase catalyses the conversion of  $\beta$ -carotene to canthaxanthin, see Figure 28. In the absence  $\beta$ -carotene hydroxylase (*crtZ*), canthaxanthin is formed as an end product. The *crtE*, *crtB*, *crtI*, and *crtY* genes from *Falvobacterium* sp. R1534 are known in the prior art, see U.S. patent 6,087,152 (HOHMANN *et al.*), which has one common inventor with the instant application. The claims in U.S. patents 6,291,204 and 6,677,134 matured from the parent applications serial numbers 08/980,832 and 09/920,923, respectively, are directed to methods of making zeaxanthin, and astaxanthin and adonixanthin, respectively, and were orally restricted from one another in serial number 08/980,832. Thus, the two patents presented no double patenting issues. Although SEQ ID NO: 31 and 32 are highly homologues (~98%) to known sequences in the prior art encoding and having the same enzymatic activity, respectively, see page 51, lines 27-33, the sequences are novel over the prior art of record. Thus, the use of nucleic acid sequences encoding the  $\beta$ -carotene  $\beta$ 4-oxygenase of SEQ ID NO: 32 including SEQ ID NO: 31 in a recombinant method to make canthaxanthin is novel, and therefore, the claims are allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nashaat T. Nashed, Ph. D. whose telephone number is 571-272-0934. The examiner can normally be reached on TWTF.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen M. Kerr can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nashaat T. Nashed, Ph. D.  
Primary Examiner  
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